

RANGE MANAGEMENT ADVISORY COMMITTEE

STRATEGIC PLAN FOR THE COORDINATED MANAGEMENT OF NOXIOUS WEEDS IN CALIFORNIA

INTRODUCTION and EXECUTIVE SUMMARY

An explosion of invasive weeds is overrunning California. These non-native weeds, such as yellow starthistle, fall under the classification of noxious weeds. In addition to being an economic threat, noxious weeds are robbing California of its rich biological diversity. Because of California's geographic position and high level of commerce, the state will continue to be subject to new introductions of weed species.

These problems and the need for action were discussed by the Range Management Advisory Committee's (RMAC) Noxious Weed Subcommittee at its meeting on November 18, 1998. This report is a product of those initial discussions.

The goals of this Strategic Plan for the coordinated management of noxious weeds are:

- 1) Increase the profitability and value of cropland and rangeland.
- 2) Decrease the costs of roadside, park, and waterway maintenance.
- 3) Reduce fire hazard and fire control costs in the state.
- 4) Protect and enhance the biodiversity of California ecosystems.

To accomplish these goals it will be necessary to:

- 1) Bring about greater statewide coordination, cooperation, and ACTION to successfully halt the spread of noxious weeds and help restore weed infested lands to a healthy and productive condition.
- 2) Heighten all citizens' awareness of the degradation brought to California lands by the explosive spread of noxious weeds.

The Plan will address eight major issues critical to building strong and successful regional and statewide noxious weed management program

- I Organization and Leadership
- II Funding and Resources
- III Coordination, Cooperation and Partnerships
- IV Awareness and Education
- V Mapping, Monitoring and Assessment
- VI Detection and Prevention
- VII Research and Technology
- VIII Enforcement and Compliance

The Strategic Plan recommends institutionalizing and financially supporting *Cooperative Weed Management Area* and broad application of *Integrated Weed Management* practices. To accomplish this, the supporters and cooperators will seek to meld resources, priorities and strategies into a unified action for halting or reducing the spread of noxious weeds across California. This is the best method for reducing the extensive ecological, economic and social impacts of noxious weeds on the State's resources and people.

BACKGROUND

The Place

California encompasses approximately 101 million surface acres. Nearly 45 percent or 45 million acres is federally owned and managed primarily by the U.S. Forest Service (24.3 million acres), the U.S. Bureau of Land Management (17.1 million acres), the U.S. Park Service (4.6 million acres), and the Dept. of Defense (3.5 million acres). Most of the federal land is non-cultivated forest and rangeland. The State of California owns and manages approximately 2 million acres, primarily forest, park and rangeland. The balance, 54 million acres, is in private or municipal ownership.

The use of these 101 million acres of California lands is estimated as follows:

<u>Land Use</u>	<u>Acres (millions)</u>
Rangeland,	22.0
Agricultural Land	12.0
Forestland	36.0
Brush	12.0
Urban	6.0
Surface Water	2.1
Wetlands	5.6
Other & Miscellaneous	6.1

The Problem

A weed is simply a plant out of place. A plant is usually considered a weed when it interferes with beneficial uses of land or water or when it grows in place of, or interferes with the growth of desirable plants. Most troublesome weeds are “exotics” or non-native species. Simply stated, weeds steal moisture, nutrients, and sunlight from surrounding desirable plants. They typically become established in areas where human activities have caused soil disturbance; road building and construction, non-intensive farming, poorly managed grazing or logging, urban development, and high impact recreation areas.

Some weeds, such as wild oats or ripgut brome, have had profound impacts on wildland ecosystems, but are so widely established that management is simply designed to minimize impacts rather than to eradicate the weed. For many of the most troublesome cropland weeds there is little hope of wide eradication, but cultural farming practices combined with the use of selected herbicides offer reasonable control. “Noxious” weeds, on the other hand, are weeds that are so designated by state law or county ordinance because they cause, or can cause, extraordinary negative economic and ecological impacts.

Noxious weeds are spreading at an alarming rate across the Western United States and California is no exception. Weeds typically spread through seeds dispersed in a variety of ways. Wind, water, animals, machinery, and people carry seeds from one location to another. Because society has become increasingly mobile, weed seeds can and do travel great distances quickly. Weeds usually become established and advance along highways, roads, trails, and river corridors. Some noxious weeds, such as purple loosestrife, a major threat to California’s wetlands and riparian areas, have been spread through ill-advised horticultural and home garden plantings. Others have been

inadvertently introduced through planting of contaminated crop seeds or spread through the feeding of weed seed contaminated livestock forage.

Prolific seed producers (yellow starthistle may produce 4000 seeds per plant), weeds can spread at astonishing rates. Yellow starthistle was estimated to infest 4 million acres in California in 1973. Today, it is established on, and severely degrading, over 12 million acres and continuing to expand. Weeds left unchecked can spread at a surprising 14 percent per year.

The negative impacts of weeds, particularly the noxious weeds, are well known and profound. Weeds interfere with the establishment, growth, and reproduction of desirable and economically valuable native plant species. Watersheds, dominated by noxious weeds can be less efficient in absorbing and storing water resulting in increased soil erosion reduced water quality.. Unchecked weed growth may lead to increased fire risk and damage. The productive capacity of noxious weed dominated wildlands is diminished; forage production declines for all classes of wild herbivores and some small bird and animal habitats may be locally eliminated. At North Dakota's Theodore Roosevelt National Park, leafy spurge reduced available bison forage by 83 percent and deer and elk forage by 70 percent. In Montana, studies have shown that the forage capacity of elk ranges was reduced 40 percent by the domination of spotted knapweed.

Many noxious weeds, such as yellow starthistle, scotch or musk thistle, interfere with recreation activities because of the physical discomfort or irritation to humans caused by barbs, spines, and prickles on seeds and other plant parts. For example, puncture vine (goathead) a common weed of urban areas and extensively established along roads and trails, causes innumerable punctures of bicycle tires which results in substantial repair or replacement costs.

Left unchecked, noxious weeds lead to monocultures that displace native and endangered species. In addition, noxious weeds cause substantial decline in rangeland forage production, many noxious weeds are poisonous or injurious to livestock and wildlife. On forested lands, noxious weeds may retard or doom reforestation efforts following timber harvest or wildfire.

The Cost

Nationally, it is estimated that direct and indirect costs for controlling noxious weeds are as high as \$5.4 billion annually. The estimated annual loss of productivity caused by noxious weeds in 64 crops grown in the U.S. is \$7.4 billion. Fiscal year 1998 expenditures by California's state agencies for noxious weed control was approximately \$5.0 million. *The Forest Service (FS) and the Bureau of Land Management (BLM) together spent approximately \$ 0.45million for weed control on California federal lands during 1998.*

Statewide, the amount spent by private landowners to control noxious weeds is unknown, although must be in the range of many hundreds of millions. Yet, the true costs to California citizens from the impacts of noxious weeds are unknown. The value of lost production, loss of diversity and the degradation of wildlife habitat and watershed health are difficult to enumerate. If the tidal wave of noxious weeds across California lands is to be calmed, more resources are needed

The Solution

Simply stated, the solution is to stop the spread of noxious weeds across the lands of the State and to reclaim and restore weed infested lands to a healthy, productive condition. To achieve this goal, the Strategic Plan recognize the importance of building effective "grass roots" organizations and

consistent use of a few basic tactical or operational techniques that have emerged as the signature of effective weed management programs in other areas or states:

Cooperative Weed Management Areas (CWMA): This is the basic organization widely recognized as a model for carrying out a comprehensive and effective integrated weed management program on the ground. It brings together all landowners and managers - (private, county, state and federal) - in a watershed or geographical area for the purpose of combining their expertise, energy and resources to deal with a common problem (the whole is greater than the sum of the parts).

Noxious weeds do not respect ownership or jurisdictional boundaries. Therefore, the intent is to blur or eliminate those boundaries through effective cooperation. The success of one landowner at checking the spread of noxious weeds is, in the long run, dependent on the success of adjacent landowners. While there is no formula for precisely determining the boundaries of a CWMA, in California it is best to form them at a county or multi-county level to offer the best coordination with the Agricultural Commissioner and other organizations which follow these boundaries.

CWMA are voluntarily governed by a Steering Committee and a chairperson. It does not diminish, supercede, or replace functions of any subdivision of state or county government such as a County Agricultural Commissioner or Soil Conservation District. Rather, it includes them as partners or cooperators.

Integrated Weed Management (IWM) is a *systems* approach to weed management. It involves the use of the best available control techniques for the target weed(s) to limit the impact and spread of the weed. Selected control methods are determined by the group based on the objectives for the land, effectiveness of the control techniques on the target species, land use, economics, environmental and climate factors, and on the extent and nature of the weed infestation. IWM typically includes strategies for:

- Awareness and education
- Early detection and prevention of noxious weeds
- Use of all available “tools” to combat noxious weeds: physical or mechanical; biological control agents; herbicides; and cultural and management practices
- Restoration of weed impacted or vulnerable lands

After the boundaries of the CWMA have been established, and sufficient public meetings have been held to help all citizens in the CWMA understand the goals, objectives and planned actions, work toward the development of an IWM plan can proceed. Basically, this requires an inventory and mapping of weed infestations, identification of priorities, selection of prevention strategies and control techniques, and monitoring and assessment of the effectiveness of completed work.

Roles, Responsibilities & Organizations

Like most states in the Western U.S., California is a complex mosaic of land ownership and use which produces a set of unique challenges for building a well coordinated, consistent, effective noxious weed management program. Noxious weed management on federal lands is governed by several federal laws that have many similarities but some differences from the California’s weed laws that governs non-federal noxious weed management.

Non federal lands

Statutory authority for the noxious weed control programs can be found in the following sections of the California Food and Agricultural Code. (403,431, 432, 433, 461, 482, 5021, 5101, 5401, 5405 and 5421-See Appendix A for brief descriptions).

Noxious weeds in California are rated as “A”, “B”, “C” or “Q”. The “Q” rating is a temporary rating for a new plant identification and subject to review for a permanent rating in the future, depending on the potential threat of the plant, it may receive a noxious rating. The “A”, “B” or “C” rating is based solely on the distribution of the plant and not the degree of noxiousness. An “A” rated weed is usually limited distribution within the State and not widespread and considered eradicable from the State (some exceptions). “B” rated weeds are more widespread and “C” rated are generally widespread. “B” rated weeds may be under eradication or control at the county level depending upon the County Agricultural Commissioner. The “B” and “C” rated weeds are most likely to be under control through the use of biological control, which is a separate program.

The California Department of Food and Agriculture has an active pest prevention system that prevents the introduction and spread of injurious insects or animal pests, plant diseases and noxious weeds. The pest prevention system has five major components:

- 1) Exclusion - this includes inspection of vehicles entering the state at our border stations. The biggest emphasis is on the interception of various insect pests; however, noxious weeds and weed seeds are frequently found and destroyed.
- 2) Detection - CDFA biologists actively survey high hazard areas, such as roadsides for terrestrial weeds and major recreational use bodies of water for the aquatic weed hydrilla. In addition, the 58 counties within the state are represented by 54 Agricultural Commissioners that have personnel that watch for noxious weeds or are actively involved with surveys and eradication activities. Biologists with the Department of Food and Agriculture give regular training on the identification of noxious weeds to the county biologists.
- 3) Control/Eradication - When a weed infestation is located, our Department actively delimits the infestation and takes steps necessary to control or eradicate these infestations. Integrated pest control methods are utilized including chemical, physical, and biological control depending on the size of the infestation, accessibility or sensitive areas.
- 4) Public Information - this includes giving weed identification presentations to interested groups and distribution of brochures and pamphlets on hydrilla. The brochures and pamphlets are distributed periodically to marinas, sporting good stores and other locations.
- 5) Analysis and Identification - suspect weed samples are submitted to the Department’s Plant Taxonomist for official identification.

The objectives of the Weed and Vertebrate and the Hydrilla Programs are the early detection of incipient infestations of noxious terrestrial weeds and hydrilla and the subsequent eradication of those infestations.

The Weed and Vertebrate Program of the California Department of Food and Agriculture is the lead agency for the eradication of “A” rated weeds. Program staff is responsible for providing training on the biology and identification of noxious weeds and control methods to County Agricultural Commissioners and other cooperating agencies and interested parties. The Weed and Vertebrate Biologists and the County Agricultural Commissioners staff cooperatively conduct detection surveys of entryways, rangeland, crops and other habitats where pests might be initially introduced. The eradication, control or containment of “A” rated weed pests are carried out by the Weed and Vertebrate staff in coordination with County Agricultural Commissioners and the land owner or land manager.

In California the County Agricultural Commissioners work closely with the Department of Food and Agriculture. Resources available from each County varies widely. The County Agricultural Commissioner, under section 5421, may require a landowner to eradicate destroy or control a pest.

Fourteen weeds are considered eradicated statewide due to efforts of the Weed and Vertebrate Program and the County Agricultural Commissioners. The Biological Control Program is a separate program and is responsible for identifying, rearing, establishing and distributing biological control agents for the control of weed and insect pests. Most of the weed work performed by this program is for controlling weeds that are generally widespread and not considered eradicable. These would include such weeds as yellow starthistle, bull thistle and puncture vine. Work includes obtaining and releasing new agents once established, the redistribution of those agents to other areas of the State. This program also gives training workshops to County Agricultural Biologists, so they can redistribute agents at the local level. In addition, this program assists the weed eradication projects by seeking and introducing agents where terrain, size of infestation or sensitive areas preclude the use of herbicides.

Federal lands By virtue of the preponderance of land that it controls, the federal government, principally the U.S. Forest Service (FS) and the Bureau of Land Management (BLM), has a major impact on the success or failure of weed management programs statewide. There are a host of laws that address control and management of noxious weeds on federal lands but the principal statute driving federal weed management efforts is the Federal Noxious Weed Act [7 U.S.C. sections 2801-2813]. The Executive Order 13112 of February 3rd, 1999 lays out a broad plan for halting and reversing the effects of invasive species. Other federal acts which also address noxious weeds but to a lesser degree include the 1990 Food, Agriculture, Conservation, and Trade Act (FACTA), and Executive Order 11987.

Currently, there are 94 species officially recognized as “Federal Noxious Weeds” although several others not on the federal list are on State noxious weed lists. Both the FS and the BLM have recently drafted Weed Management strategies: the BLM’s “Partners Against Weeds” (1/96) and the FS Noxious Weed Strategy (3/96). Both agencies, along with several other federal and state agencies and many other societies, federations, associations, councils, and private companies are participants in the “Pulling Together” national Invasive Plant Management Strategy. Since 1994, the U.S. Department of Agriculture, through the FS, and the U.S. Department of the Interior, principally through the Bureau of Land Management, have greatly increased the emphasis and resources given to combating the spread of noxious weeds on federal lands. Today, noxious weed

management is a high priority for most FS and BLM field offices although targeted funding continues to be chronically short.

Other Weed Management Organizations In addition to the local CWMA, there are a number of organizations that have an impact on the management of noxious weeds in California. Some are statewide organizations such as the California Exotic Pest Plant Council, California Interagency Noxious Weed Coordinating Committee, the California Native Plant Society, the California Weed Science Society, and the Range Management Advisory Committee. Others, such as the Western Weed Coordinating Committee and California Forest Pest Council are regional organizations, which focus on weed problems in the West

Noxious weeds are of great concern to California's agricultural industry. Various crop, livestock producer, seed grower and water users associations distribute educational materials on weed management and provide training and educational materials for their members. Other organizations such as the Nature Conservancy, which is both a landowner and manager of several unique California properties, are strong supporters of an aggressive weed management program.

STRATEGIC PLAN: 1998

I. ORGANIZATION AND LEADERSHIP

More inclusive, focused, and consistent organization

Issue: *The complex land ownership and jurisdictional situation in California, and the different laws and rules which govern them, require landowners to organize and operate in a collaborative manner to effectively deal with the significant ecological, economic, and social problems resulting from the explosive spread of noxious weeds.*

Action: The central element of this Plan is the consistent and vigorous development of locally led community-based weed management organizations, hereafter referred to as Cooperative Weed Management Areas (CWMA). The CWMA will be fully integrated with the County Departments of Agriculture (CDA), the California Department of Food & Agriculture (CDFA), University of California Cooperative Extension (UCCE), and the agencies, producer associations, non-profits and other stakeholders of the California Interagency Noxious Weed Coordinating Committee (CINWCC – see glossary).

The UCCE, the CDA, the CDFA, CINWCC and CalEPPC will be encouraged to provide expertise for the organization of CWMA and to support them organizationally and technically. In areas of the State with a high percent of federally owned lands, the federal agencies, principally the Forest Service and the Bureau of Land Management, will also encourage, and serve as catalysts for, organizing CWMA. CDFA will be funded to create a CWMA Statewide coordinator to serve the CWMA as an organizational resource and to prevent the duplication of effort. The Statewide Coordinator will administer funding allocation program for the CWMA. An oversight committee will be established to monitor and evaluate program progress. The membership will include:

Secretary of Agriculture, or a designee, to serve as chair

and members of the following:

1. Livestock Production
2. Agricultural Crop Production
3. Forest Products Industry
4. Crop Protection Industry
5. Sportsman/Wildlife Group
6. Biological Control Research Organization
7. California Exotic Pest Plant Council
8. Native Plant Conservation Organization
9. Land Based Conservation Organization
10. California Association of Resource Conservation Districts

The California Interagency Noxious Weed Coordinating Committee will serve in an advisory capacity for the oversight committee.

Working in partnership with other organizations, the UCCE, the CDA, CDFA and CINWCC will coordinate support and training to CWMA leaders, for developing and implementing more effective programs, particularly the formation of CWMA and creation of local management plans.

Properly organized and led, CWMA will optimize coordination opportunities for managing noxious weeds across watersheds or similar geographical areas. While retaining their own distinguishing mission and management objectives, landowners will be encouraged to improve coordination and cooperation by working together on well defined projects. The leveraging of resources for acquiring and effectively utilizing equipment, biological agents, herbicides, mapping and monitoring information, and human resources, including volunteers is encouraged and supported. This efficient use of resources will increase the likelihood of CWMA acquiring outside resources through challenge grants or cost-sharing.

II. FUNDING AND RESOURCES

Obtain adequate funding for CWMAs at the Statewide and Local Level

Issue: *Funding for all phases of noxious weed management is chronically inadequate statewide. The current rate of spread of major weeds and the introduction of new species is far outstripping our ability to contain them. The problem is most acute in counties with sparse populations and small private land bases resulting in a low tax base. Furthermore, federal funding is still far from sufficient to deal with the extent and scope of the problem on the nearly 45 million acres of federal land in California. Funding is most deficient at the local level.*

Action: Encourage and support legislation to provide base funding and ongoing monetary support for the local CWMA. The additional fund would also provide the resources for supporting additional weed management specialists at the state level. This would increase assistance available to local weed management organizations for developing more effective on-the-ground programs. A State grant program administered by CDFA would provide the critical resources to bridge the gap between needs and current funding.

A primary goal is to strengthen on-the-ground weed management programs through broader citizen involvement by: (1) expanding the formation of *CWMA*; and (2) the development of more *integrated weed management plans*. Yet, for these efforts to be realized, additional monetary resources need to be created. Broader use of these organizational and planning tools will lead to greater awareness and support of local citizens and ultimately a willingness to allocate more resources at all levels to meet the problem. The involvement of the Resource Conservation Districts will allow the CWMA to tap into their expertise and funding potential.

Other measures that would help provide greater resources include actively working with the California Congressional delegation to encourage and support: (1) increases in agency budgets specifically targeted for managing noxious weeds on federal lands, and (2) major budget increases or legislative initiatives to accelerate funding for research and technology transfer. Federal agency managers will be encouraged to: (1) allocate greater resources to noxious weed management; (2) create more field positions dedicated to weed management; and (3) provide more support and cooperative funding for Biological Control, including animal impact.

CWMA will maintain the management skills to assure accountability of public funds as interagency programs and grants are implemented.

III. COORDINATION, COOPERATION, AND PARTNERSHIPS

More effective and consistent coordination and cooperation at all levels

Issue: *As the noxious weed problem becomes more widespread and acute, the need for better coordination is critical. Scarce resources should not be wasted by duplication of effort or by the failure to apply consistent measures across ownership and jurisdictional boundaries.*

Action: Developing and sustaining an efficient, effective, and well-coordinated statewide weed management program is the mission of the California Interagency Noxious Weed Coordinating Committee (CINWCC). It strives to eliminate all institutional, jurisdictional, and political barriers that inhibit effective on-the-ground weed management. It also seeks to strengthen the fundamental strategic and tactical elements of an effective program at the local, state, regional, and national level. Signatory agencies to CINWCC must commit to full participation in all meetings. CINWCC will act in an advisory capacity to the oversight committee responsible for monitoring and evaluating the implementation of the noxious weed program.

IV. AWARENESS AND EDUCATION

Alert resource management professionals and rural landowners about the problem of noxious weeds. Integrate weed management into environmental and resource management activities

Issue: *Few citizens in the non-agricultural sector understand how the spread of noxious weeds negatively impacts the environment, economy, and the outstanding natural resources so important to them. Although considerable progress has recently occurred, weed management still tends to be viewed professionally as a distinct activity or “program” rather than an integral part of natural resource management activities: outdoor recreation, grazing, timber, fire, wildlife, wilderness, transportation corridor, and urban area management.*

Action: Develop and disseminate information about the nature, characteristics and impact of noxious weeds on the environment, economy and quality of life in California. This information will also be incorporated into information about related issues, such as threatened and endangered species, water quality and wildfire. Integrate information about the impact of noxious weeds and the need to manage them into public education environmental curricula. State and regional cooperators will lead this effort because of the cost and complexity of delivering a quality, appealing statewide program. Emphasize the need for prevention practices through awareness and education programs. Develop educational pamphlets, brochures and workshops that address topics such as using certified weed-free seed and forage, animal grooming to reduce the risk of transporting noxious weed seed, cleaning and washing construction equipment, avoiding the use of gravel, fill or top soil contaminated with weed seed, and maintaining high human-use areas in a weed-free condition. Provide weed identification training to citizens and landowners to raise awareness about weeds commonly found in their area.

Issue: *Raising public awareness and understanding requires a well-planned, well-funded and long-term program. To capture public interest and mobilize citizens to stop the spread of weeds, there is a critical need to attract and hold the attention of the local, state and national media.*

Action: Cooperatively utilize professional public information specialists to develop a statewide information program and coordinate television spots, ad campaigns and public service announcements.

Issue: *Increased actions from local, state and national officials in dealing with weeds first requires greater awareness and understanding from California citizens and landowners. Some California legislators have little understanding of the risks associated with noxious weeds and the resources needed to effectively manage weeds across California.*

Action: Create more effective informational brochures, videos and educational materials and widely distribute them. Develop briefing packages and presentations for national, state, and local officials.

V. INVENTORY, MAPPING, AND MONITORING

Locate and map existing noxious weed infestations

Issue: *Lands infested by noxious weeds are not now consistently identified and delineated. Complete up-to-date maps, displaying the distribution and severity of weed infestations, are available in only a few areas. Even though some weeds are very prevalent in most of California they are still rare and eradicable in small sub-regions of the state. Knowing which weeds are located where is paramount to: (1) raising public awareness and concern; (2) getting support and funding for building a quality program; (3) developing effective on-the-ground integrated management plans with specific actions to control them; and (4) conducting local eradication of widespread weeds when appropriate.*

Action: Develop and implement an integrated weed management plans with an effective weed-mapping component, which provides the ability to:

- identify and record the location of noxious weeds
- calculate the total number of acres infested for each noxious weed on the State list
- identify critical areas for local weed eradication projects
- determine rate of spread for each weed by comparing inventories from year to year

Develop a more consistent statewide noxious weed monitoring program

Issue: *As is the case with weed mapping, there is little factual and/or reliable data regarding the success or failure of on-the-ground weed management efforts. Other than personal observation and professional judgement, there is seldom any baseline information available on which to make evaluations. Since success will depend on achieving the objectives in strategic plans, integrated weed management plans and their component annual operating plans, it is imperative that sufficient information be available at all levels to assess changes and trends.*

Action: Fund a State Weed Mapping Coordinator to facilitate systematic collection and analysis of statewide weed data and make it readily available for field use.

Action: Develop and implement an effective on-the-ground monitoring systems. This includes:

- establishing inventories or collecting baseline data (pooling of existing knowledge and data of cooperators);
- compiling data for making decisions and establishing priorities;

- evaluating the effectiveness of treatment and management measures;
- closely monitoring eradication sites to prevent re-infestation. Seek cooperative funding for inventory and mapping at the local level.

VI. DETECTION and PREVENTION

Strengthen the detection/prevention standard

Issue: *Prevention, early detection, and eradication of newly arrived noxious weed species are the most practical and economical means of weed management. Prevention is accomplished by ensuring that seed or reproductive plant parts of new weed species are prevented from being unintentionally introduced to an area. Prevention also involves an understanding of which lands are most susceptible to invasion of exotic weeds.*

Action: Emphasize ***prevention*** in all awareness and education programs. Develop pamphlets, brochures and workshops that address:

- Avoiding the use of gravel, roadfill, mulch, or topsoil from contaminated areas or containing contaminated elements.
- Agricultural use of certified weed-free seed on cropland, reforestation and rangeland rehabilitation projects, and the use of weed free feed grains, forage and straw for livestock
- More fully protect the state's points of entry against the movement inwards of exotic invasive species.
- "Cleansing" measures to rid noxious weed seed from the gut, hair, or wool of livestock and other domestic animals moving to and from contaminated areas
- Washing or cleaning equipment, machinery and vehicles coming from weed contaminated areas: fire suppression, construction, logging, mining, oil and gas exploration and production, recreation, agriculture, utility corridors etc.
- Reducing noxious weed seed along canals, ditches, highways and roads, and other transportation and travel corridors

Also encourage CWMA cooperators to develop *prevention standards and guidelines* in integrated weed management plans for the activities addressed above.

Action: Ensure that all integrated weed management plans contain provisions and mechanisms for early detection and eradication of newly -introduced weeds. Provide weed identification training at workshops, seminars, and meetings of weed management specialists and stress the need for immediate, decisive eradication action for new discoveries focusing detection efforts in weed-free areas. Through CWMA grants provide significant incentives and awards for eradication of newly introduced weeds. At the local level, encourage the approval by CWMA of "bounties" for discovery of new invaders.

VII. RESEARCH and TECHNOLOGY DEVELOPMENT

Obtain public and legislative support for accelerating critical research and technology development

Issue: *Inadequate public understanding of the scope and severity of the noxious weed problem and the concurrent lack of funding has delayed needed research, particularly that relating to exotic perennial invasives on non-cultivated lands.*

Action: Increase research and technology development funding.

Research and technology development priorities for California include:

- Foreign exploration and host testing for new biological control agents for the noxious weeds beyond eradication.
- Land restoration systems and suitable species for reclaiming disturbed and/or weed infested lands
- Effective integration of biological control agents with other weed management tools: herbicides, cultural practices, management and restoration systems
- Development of more alternatives for noxious weed management including use of grazing animals, new more specific chemical agents, and other techniques
- Economic analysis of the impacts and losses from invasive weeds and the benefits from integrated weed management
- Selecting and/or developing weed databases and remote sensing techniques for locating and mapping invasive weeds and biological control agents
- Database and software applications for developing susceptibility indexes for potential invaders and specific sites

VIII. COMPLIANCE and ENFORCEMENT

Seek voluntary compliance with state and federal weed laws from landowners and managers

Issue: *Compliance of landowners and managers with existing state and federal weed laws is inconsistent from property to property and from area to area.*

Action: Provide incentives for preventing, controlling, or eradicating noxious weeds.

Fair and consistent enforcement of noxious weed laws

Issue: *A large segment of the public is unaware of the impacts of noxious weeds and few landowners and jurisdictions have effective plans for managing weeds. Therefore, there is little public interest and usually little public pressure on managers and control authorities to enforce weed laws. Typically, there are few consequences to them when they fail to do so.*

Action: Build greater support for control authorities to enforce noxious weed laws.

- Restore 24 enforcement operators at all the agriculture border check stations.

Glossary of Weed Control Related Organizations in California

CalEPPC – California Exotic Pest Plant Council – A volunteer organization dedicated to the control of invasive exotic plants in California, especially those invading wildland settings.

CACASA – California Agricultural Commissioners and Sealers Association – The statewide organization of the County Commissioners. The CACASA has a weed control committee.

CDA – County Departments of Agriculture. Each county has a Department of Agriculture led by an Agricultural Commissioner. The CDA carry out many of the functions of regulated noxious weed control and prevention.

CDFA - California Department of Food and Agriculture - The lead agency in California for regulated noxious weed control and prevention.

CINWCC – California Interagency Noxious Weed Coordinating Committee An interagency working group that meets quarterly the coordinate weed control activities at a statewide level. The list of signatory agencies is as follows:

- California Agricultural Commissioners and Sealers Association
- California Department of Food and Agriculture
- California Department of Transportation
- California Resources Agency
 - Department of Boating and Waterways
 - Department of Fish and Game
 - Department of Forestry & Fire Protection
 - Department of Parks and Recreation
 - Department of Water Resources
- Department of the Army, U.S. Corps of Engineers, South Pacific Division
- U.S. Department of Agriculture, Natural Resources Conservation Service
- U.S. Department of Agriculture, Animal and Plant Health Inspection Service
- U.S. Department of Agriculture, Forest Service
- U.S. Department of Defense, Air Force
- U.S. Department of Interior, Bureau of Indian Affairs
- U.S. Department of Interior, Bureau of Land Management
- U.S. Department of Interior, Bureau of Reclamation
- U.S. Department of Interior, Fish and Wildlife Service
- U.S. Department of Interior, National Park Service

The non-signatory stakeholder groups which are integral to CINWCC are: California Association of Nurserymen, California Cattlemen's Association, California Exotic Pest Plant Council, California Native Plant Society, The Nature Conservancy, U. S. Department of Agriculture: Agricultural Research Service, the University of California Cooperative Extension.

CWMA – Cooperative Weed Management Areas - This is the basic organization widely recognized as a model for carrying out a comprehensive and effective weed management program on the ground. It brings together all landowners and managers ... private, county, state and federal ... in a watershed or geographical area for the purpose of combining their expertise, energy and resources to deal with a common problem (the whole is greater than the sum of the parts).

RMAC – Range Management Advisory Committee – An appointed committee which advises the California Department of Forestry and the California Department of Food and Agriculture on range management issues. It has a Noxious Weed Management Subcommittee.

Appendix A

Statutory Authority: Statutory authority for weed control programs is provided by the following sections of the Food and Agricultural Code.

Section 403: The department shall prevent the introduction and spread of injurious insect or animal pest, plant diseases and noxious weeds.

Section 431: The department shall collect and preserve books, pamphlets, periodicals and other documents which contain information that relates to agriculture.

Section 432: The department shall collect and prepare statistics, charts, films, photographs and other illustrative or exhibit material and information which shows the actual condition and progress of agriculture in this state and elsewhere.

Section 433: The department shall correspond with agricultural societies, colleges, schools, the commissioners and with all other persons who are necessary to secure the best results to agriculture in this state.

Section 461: The department may conduct surveys or investigations of any nursery, orchard, vineyard, agricultural commodity, agricultural appliance, farm or other premises within the state liable to be infested or infected with any pest as defined in Section 5006 or disease, including any infectious, transmissible and contagious diseases of livestock and poultry, for the purpose of detecting the presence of, or determining the status of, the pest or disease.

Section 482: The Secretary may enter into cooperative agreements with individuals, associations, boards of supervisors and with departments, bureaus, boards or commissions of this state or of the United States for the purposes of eradicating, controlling, or destroying any infectious disease or pest within this state. The Secretary may enter into cooperative agreements with boards of supervisors for the purpose of administering and enforcing this code.

Section 5021: Unless otherwise provided, any treatment which may be required pursuant to this division is at the risk and at the expense of the owner or person in charge or in possession of the property which is treated at the time of treatment.

Section 5101: Each commissioner is an enforcing officer of all laws and regulations which relate to the prevention of the introduction into, or the spread within the state, of pests. The commissioner is, as to such activities, under the supervision of the Secretary.

Section 5401: Any premises, plants, conveyances or things which are infected or infested with any pest, or premises where any pest is found, are a public nuisance and shall be prosecuted as such in all actions and proceedings. All remedies which are given by law for the prevention and abatement of nuisance apply to such a public nuisance.

Section 5405: The board of supervisors of any county may authorize the commissioner to contract with any state/federal agency, public corporation for municipal purposes, or person that owns,

controls or administers within the county and property or premises which are infected or infested with any pest, to eradicate, destroy or control it on such property or

premises. The contract shall not impose any cost or obligation on the county unless the imposition of the cost or obligation upon the county is authorized by the board of supervisors.

Section 5421: If the commissioner finds, after inspection, that any premises, plant, conveyance or thing in his jurisdiction is infected or infested with any pest, he may in writing, notify the record owner or person in charge or possession of the premises, plant, conveyance, or thing, that is infected or infested with a pest. He may, to his satisfaction, require the person to eradicate, destroy or control the pest within the time which is specified in the notice.